

Attempted Suicide Short Intervention Program Influences Coping Among Patients with a History of Attempted Suicide

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Abstract

Background: The development of individual coping strategies for suicidal crises is essential for suicide prevention. However, the influence of a brief intervention and the effect on coping strategies is largely unknown. This study aimed to investigate the influence of the Attempted Suicide Short Intervention Program on the development of coping strategies, in comparison to a control group.

Method: In this secondary analysis of a 24-month follow-up randomised controlled study, 120 patients (55% female; mean age of 36) with a history of suicide attempts were randomly allocated to either the ASSIP group or to a control group, in addition to treatment as usual.

Results: The present study identified 11% less dysfunctional coping in the ASSIP group and 6% more problem-focussed coping compared to the control group after 24-months. The analysis of broader strategies showed a statistically significant group difference regarding self-distraction (after 12-months) and self-blame (after 24-months). In regard to the long-term association between coping strategies and suicidal ideation, active coping and substance use were negatively associated with suicidal ideation in the ASSIP group. Whereas, in the control group, behavioural disengagement and positive reframing were positively and self-distraction was negatively related to suicidal ideation.

Limitation: The receipt of a clinical interview and suicide risk assessment in the control group could have potentially had an effect on participants' coping mechanisms.

Conclusion: These results indicate that ASSIP may have an impact on the development of problem-focussed coping strategies. Although a reduction in dysfunctional coping seems to be essential in overcoming suicidal crises.

Keywords: attempted suicide, coping behaviour, Attempted Suicide Short Intervention Program, brief therapy, suicidal ideation

Introduction

Coping is a key element in solving personal and interpersonal problems and in handling stress. It has been defined by Lazarus (1993) as a process in which cognitive and behavioural efforts are made to manage psychological stress. The success of an individual's coping efforts therefore depends on both the type of stress and the particular individual in his or her circumstances (Lazarus & Folkman, 1984). Adolescents who are under stress or depressed tend to use more dysfunctional coping strategies such as behavioural disengagement (Horwitz, Hill, & King, 2011; Wadsworth & Compas, 2002). Further examples of dysfunctional coping strategies are denial and distraction, which are also related to higher levels of stress and are associated with depression and anxiety (Caims, Yap, Pilkington, & Jorm, 2014; Ryan, Cooper, Austin, & Livingston, 2013; Schaffer and Pritchard, 2003). Conversely, adaptive coping strategies predict psychological functioning and wellbeing (Riley, Kirsch, Shapiro, & Conley, 2016). As for example, strategies based on acceptance and seeking emotional support (Ryan, Cooper, Austin, & Livingston, 2013) or attribution to external factors in failure and personal factors in success (Yeo, Zainal, Tang, Tong, Ho, & Ho, 2017) lower anxiety and depression. Some researchers have found that coping styles among patients with and without suicidal ideation differ (Horwitz, Czyz, Berona, & King, 2018; Spirito, Overholser, & Stark, 1989). For example, avoidant and emotion-focussed coping (e.g. seeking emotional support) are associated with greater suicidal ideation, self-harm, and suicidal behaviour (Guerreiro et al., 2013; Marusic & Goodwin; Williams & Hasking, 2010). Conversely, problem-focussed coping and positive future planning seemed to have a negative correlation to self-harm in some (Choo, Harris, Chew, & Ho, 2017; Guerreiro, Cruz, Frاسquilho, Figueira, & Sampaio, 2013; Horwitz et al., 2011), but not in similar research (Horwitz et al., 2011). Examining broader categories of dysfunctional coping, self-blame was associated with deliberate self-harm, and behavioural disengagement

with suicidal ideation (De Leo & Heller, 2004; Horwitz et al., 2018). Furthermore, O’Conner, Smyth, and Williams (2015) found that intrapersonal positive future thinking was only protective with regard to a suicide-specific outcome when participants were in crisis, in the hours following a suicide attempt.

Suicide can become a strategy, although dysfunctional, to escape from an unbearable state of mental pain (Michel & Gysin-Maillart, 2015; Michel & Valach, 1997; Rudd, Joiner, & Rajab, 2004; Shneidman, 1993). This dysfunctional strategy may be used, if no other coping skill is readily available. Assuming that after a suicide attempt, the "suicidal mode" (Beck, 1996; Michel & Gysin-Maillart, 2015; Rudd, 2000), once established, can be re-activated at any time in a future crisis, it is even more important to find personal coping strategies for individuals that allow them to be able to handle life-threatening issues differently. Therefore, the development of coping strategies in case of suicidal risk is a key component of various clinical interventions, ranging from listing of coping strategies (e.g. safety planning intervention by Stanley and Brown, 2012) to actively teaching of coping strategies (e.g. DBT skills-training by Linehan, 1993) in a long term. The development of coping strategies also applies to the Attempted Suicide Short Intervention Program (ASSIP; Michel & Gysin-Maillart, 2015). During the course of ASSIP patients are encouraged to become aware of biographical connections between threatened life-goals, which are related to their suicidality, and dysfunctional coping strategies. Through formulating corresponding warning signs, long-term therapy goals and simultaneously developing alternative coping strategies for future suicidal crisis, patients are empowered to face these issues over the long-term. By being sent regular letters, patients are repeatedly reminded of their coping strategies, available at any time on the “leporcello”. The brief therapy ASSIP demonstrated, in a 24-month follow-up randomised controlled study, an approximately 80% reduced risk of making at least one further suicide attempt (Gysin-Maillart, Schwab, Soravia, Megert, & Michel, 2016). One of ASSIP’s

elements is to develop new safety strategies for future suicidal crises. And thus focuses on patients' retaining of their ability to take action as well as on fostering functional and safe ways of managing future suicidal crises by improving specific coping strategies (Michel & Gysin-Maillart, 2015).

To our knowledge, no other studies have examined the long-term effect on coping strategies by a brief therapy for patients after a suicide attempt. To address this, the present study aims to analyse the influence of ASSIP on the development of individualised coping strategies for future suicidal crises in comparison with a control group. Therefore, we first hypothesised that coping strategies in patients undergoing ASSIP therapy would differ from a control group after 24-months with regard to the three main coping subscales: problem-focussed coping, dysfunctional coping, and emotion-focussed coping. We were also interested in whether changes in broader coping strategies of the three subscales establish early, intermediate or late in the course of ASSIP therapy. Therefore, our second hypothesis was that the development of the subgroups of dysfunctional, problem-focussed, and emotion-focussed coping strategies (such as for example self-blame, see Table 2) would differ between the ASSIP group and the control group over the course of two years. In addition, we were interested in the relationship between broader coping strategies and subsequent suicide-related outcomes for each group separately. In the present study, the sample size for repeat attempts ($N = 5$, ASSIP group) after 24-months was too small to investigate the relationship between coping and suicidal behaviour. Therefore, we thirdly hypothesised that the association between coping strategies and suicidal ideation after a two-year follow-up differs between the ASSIP group and the control group. In the ASSIP evaluation study (Gysin-Maillart et al., 2016), the secondary outcome collected by the Brief COPE (Carver, 1997) was not analysed, and therefore, we evaluated coping strategies in the present study.

Methods

Procedure

We analysed data from a 24-month follow-up randomised controlled study of the effectiveness of the ASSIP (Gysin-Maillart et al., 2016), which took place at the University Hospital of Psychiatry and Psychotherapy of Berne (UPD). The trial protocol of this study had been submitted to and approved by the local ethics committee in accordance with the Declaration of Helsinki (Rickham, 1964) (register number 144/08, Cantonal ethic committee Berne; trial registration: ClinicalTrial.gov NCT02505373). An experimental design with randomisation either to an ASSIP group or a control group was used (Gysin-Maillart et al., 2016). For ethical and practical reasons, the control group was offered a clinical interview and assessment of suicide risk. The majority of patients with a history of attempted suicide were referred from the emergency department of Bern University General Hospital and were seen by the psychiatrist on call. The rest were referred from the University Hospital of Psychiatry in Berne, Switzerland. The researchers obtained written informed consent and a declaration of agreement to video-record the narrative interview from all participants. For data protection all data of participants was encrypted. Written informed consent and video-recorded interviews received a numerical identification and were stored securely in a locked room. Thereafter, the three session therapy ASSIP was carried out at the outpatient department of the UPD. After the first session, participants completed the first set of questionnaires, to assess personal and socio-demographic data, coping strategies, suicidal ideation, and depression. They received the same questionnaires for the follow-up evaluation after 6, 12, 18, and 24 months.

Participants

Between January 2009 and December 2012, 291 individuals were referred to the study, of which 171 were excluded. Reasons for non-participation were that no contact could be made or that they declined to participate. Patients were excluded ($N = 98$) if they met any of the

following conditions: insufficient knowledge of the German language, current psychotic disorder, serious cognitive impairment (e.g. loss in intellectual capacity, such as long-term memory), or residency outside the hospital catchment area. The final sample size was 120 including male and female in- and outpatients between the ages of 14 and 77. Diagnostic data and circumstances of the suicide attempts were collected from the emergency department of the General Hospital and the University Hospital of Psychiatry.

Therapists

Four trained therapists provided the brief therapy ASSIP: two experienced therapists, a psychiatrist and a clinical psychologist, trained two psychologists with an average of two years of clinical practice after graduation in the ASSIP protocol. This training included regular case supervision using the video-recorded narrative interviews.

ASSIP Therapy

ASSIP is a three-session brief therapy, which is preferably administered within three weeks following a suicide attempt (Michel & Gysin, 2015).

First session: A narrative interview is video-recorded, during which patients are asked to tell the story of the suicide attempt in their own words. The goal of the narrative interviewing technique (Michel & Valach, 2011) is to understand how patients explain their suicidal crisis in the context of their personal history. To identify relevant biographical issues, specific vulnerabilities, and trigger events, an action theoretical model of suicidal behaviour is used as a frame (Michel & Valach, 1997).

Second session: The therapist and the patient view the taped narrative interview of the first session in a video-playback, sitting side by side. The purpose is to identify the main biographical life goals related to the suicide attempt and the transition from mental pain to suicide action. Automatic thoughts, emotions, physiological changes, and contingent behaviour are identified. The video-playback helps the patient to learn more about the process of the

suicidal crisis and thus to improve suicide-related coping strategies for future crises. The therapist helps the patient to view his own suicide narrative from a new perspective as an outsider and to integrate new functional coping strategies, so that the patient will be able to influence future suicidal processes and stop the suicidal mode.

Homework: Psychoeducational homework is given to the patient after the first or second session. Patients are asked to make notes and specify whether they recognise themselves in the text.

Third session: Patients' narratives are reconstructed in a hierarchical order (suicide related actions, relevant projects, and life career issues). A written summary of the individual-biographical vulnerability and of typical triggering event(s) is developed and revised together with the patient (case conceptualisation). Relevant life-career issues are formulated. A personal list of long-term therapy goals, warning signs, and safety strategies (which were worked out in video-playback) is also compiled and copied to a credit card size "Leporello", which can be easily carried. Patients are also given a personal crisis card, which offers easy access to relevant mental-health professionals.

Outreach element: Regular semi-standardised letters are personally signed by the ASSIP therapist and then sent to the patient over a time-span of two years, every three months in the first year, and every six months in the second year. Letters remind patients about their personal strategies and the availability of the ASSIP team in times of suicidal crisis.

Measures

Patients completed a set of questionnaires after the first session and were asked to repeat completing a new set every six months for two years.

Personal and socio-demographic data (DEMO; Gysin et al., 2016). Sociodemographic data about civil status, previous suicide attempts, past treatment, in- and outpatient contacts, diagnosis, medications, substance abuse, self-harm, suicidal ideation, repeated suicide

attempts, and social contacts were collected using a 33-item self-report measure. Data about the hospital diagnosis and circumstances of the suicide attempt were collected from the emergency report of the emergency department at the General Hospital and the University Hospital of Psychiatry.

The *Brief COPE Inventory* (Carver, 1997) is a 28-item self-report questionnaire to measure coping strategies that consists of 14 scales, each of which is represented by two items (see, Table 2). Carver (1997) reported on internal consistency of all 14 scales ($\alpha > 0.5$). Participants indicate their answers on a four-point scale, rating the resemblance of each item to the coping efforts they pursued. The response scale ranges from "not at all" to "very much". Carver, Scheier, and Weintraub (1989) described and Coolidge, Seal, Hook, and Stewart (2000) operationalised the COPE in the three subscales dysfunctional, problem-focussed, and emotion focussed coping. Cooper, Katona, and Livingston (2008) reported reliability and validity of the three subscales and found good internal consistencies for emotion-focussed ($\alpha = 0.72$), problem-focussed ($\alpha = 0.84$), and dysfunctional subscales ($\alpha = 0.75$), see Table 2.

The *Beck Depression Inventory (BDI)* is a 21-question self-report inventory used to measure the severity of depression (Beck & Steer, 1987). Items are rated from zero to three to measure increasing levels of severity. The BDI is scored by summing the 21 ratings with total scores ranging from zero to 63. In the present study, the German version was used (Hautzinger, Bailer, Worall, & Keller, 1994).

The *Beck Scale for Suicide Ideation (BSS)* is a 21-item self-report instrument for measuring the current intensity of a patient's specific attitudes, behaviours, and plans related to suicidal behaviour (Beck & Steer, 1991). Suicidal ideation is screened using the first five BSS items. If, in both items, four (no indication of active suicidal intention) and five (indication of avoidance of death if presented with a life-threatening situation), the patient selects the zero statements, then the patient can skip the next 14 items (which address specific information

about the respondent's plans and attitudes). Each item is rated from zero to two. The severity of suicidal ideation can be calculated by summing up the first 19 items. Item 20 (previously attempted suicide) and 21 (severity of the suicide attempt) are qualitative items and are not included in the total score. The total score ranges from zero to 38 points. In the present study the German version of the BSS was used (Fidy, 2008).

Statistical analysis

We analysed data according to the intention-to-treat (ITT) principle. Missing data were addressed with multiple imputations by chained equations (van Buuren, & Groothuis-Oudshoorn, 2010). The 20 imputed datasets were averaged into a single dataset for subsequent analyses. For the main analyses (coping after 24-months) we additionally ran the analyses on each single imputed dataset and pooled the results (Marshall, Altman, Holder, & Royston, 2009). We tested the coping variables of the main analysis for normality. Based on a Lilliefors test, all three coping main scales were not normally distributed (dysfunctional coping, $p = 0.011$; problem-focussed coping, $p = 0.016$; emotion-focussed coping, $p < 0.0001$). Therefore, we used three non-parametric Wilcoxon rank-sum tests for group differences in the three coping main scales at the 24-month follow-up. As we found differences in dysfunctional and problem-focussed coping, we post-hoc analysed the six and three subscales of dysfunctional and problem focussed coping, respectively. We did not include the subscales of emotion focussed coping in this analysis as there was no overall effect present. We used MANOVA and ANOVA to investigate which of the dysfunctional and problem-focussed coping subscales show potential differences between groups and at which timepoints, i.e. the four follow-up timepoints at 6, 12, 18, and 24-months. The reason to use MANOVA is that the altogether nine subscales would require many tests which could inflate false positive rates. Therefore, we first applied a single MANOVA for all subscales of dysfunctional coping (with six subscales) and problem-focussed coping (with three subscales) with nine dependent variables altogether. In

the model, we used group and time as between and within factor, respectively. In a second step, we performed post-hoc analyses and applied univariate ANOVAs for each of the subscales of dysfunctional and problem-focussed coping to investigate which of the nine subscales potentially contributed to the effect previously shown by the overall MANOVA test. ANOVA is considered robust to violations of normality because of the central limit theorem which some suggest only requires 30 cases to be effective (Field et al., 2012). For effect sizes, we reported Pearson's r with the Wilcoxon test, and η^2 for ANOVA.

To investigate the relationship between coping and suicidal ideation, we used stepwise linear regression. The reason to use stepwise regression is to subset the many coping scale variables into a (reduced) set of regressors that are relevant and potentially explain BSS sum scores at 24 months follow-up. As regressors, we used 12 of 14 coping subscales; two pairs of the subscales were correlated (multicollinearity), see below. We also included BDI scores and previous suicide attempts before follow-up as additional regressors in our model. We checked the regressor variables for multicollinearity in both the groups with the variance inflation factor (VIF). We removed two subscales from the analysis as these had a $VIF > 4$: institutional support (correlated with emotional support in the ASSIP and the control group) and self-blame (correlated with BDI in the control group). Therefore, the overall number of regressors in the stepwise regression was 14 (12 coping subscales, BDI scores and previous suicide attempts). We fitted the same initial model separately in the two groups. This allows the stepwise approach to subset two different models for the two groups.

In all the analyses, a p -value of less than 0.05 was considered statistically significant, and all tests were two-sided.

Results

Descriptive characteristics

Of the 291 patients assessed for eligibility, 120 were randomly allocated to either an ASSIP ($n = 60$) and a control group (CG, $n = 60$). Of these, 54 (45%) were male (mean age 40 years, $SD = 14$) and 66 (55%) were female (mean age 36 years, $SD=14$). Descriptive characteristics of the two groups are shown in Table 1. No baseline differences of sociodemographic or clinical variables were found between the two groups, with the exception of substance abuse.

Group differences in coping strategies

We analysed dysfunctional, problem-focussed, and emotion-focussed coping after the 24-month follow-up (Figure 1). The ASSIP group showed 11% less dysfunctional coping compared to the control group (ASSIP, median=1.83; CG, median=2.05, $W = 1316$, $p = 0.011$, $r = 0.21$), and 6% more problem-focussed coping (ASSIP, median=2.83; CG, median=2.67, $W = 2217$, $p = 0.029$, $r = 0.17$) after a 24-month follow-up. There was no difference in emotion-focussed coping ($W = 1769$, $p = 0.87$). We additionally ran the same analyses on each single imputed dataset and averaged the p-values across the 20 imputed datasets which were normally distributed (Lilliefors test; dysfunctional coping, $p = 0.32$; problem focussed coping, $p = 0.40$; emotion-focussed coping, $p = 0.49$). We confirmed the group difference in dysfunctional coping (mean $p = 0.029$, 95%-CI from 0.020 to 0.039) but problem-focussed coping did not reach significance (mean $p = 0.082$, 95%-CI from 0.057 to 0.107). Again, there was no difference in emotion-focussed coping (mean $p = 0.51$, 95%-CI from 0.38 to 0.63). With dysfunctional coping and, to a lesser extend problem-focused coping, showing relevance, we used MANOVA to investigate whether any of the nine subscales of dysfunctional coping and problem-focussed coping showed group differences at any of the four follow-up timepoints. The MANOVA showed a statistically significant interaction between follow-up time and

treatment group ($F_{3, 354} = 1.50, p = 0.0496$) suggesting that there was some evidence that any of the subscales of dysfunctional or problem-focussed coping differed between groups across time. Therefore, we performed nine post-hoc univariate 4×2 ANOVAs (time \times group) that aimed at checking which individual variable of the nine subscales showed interactions. Only self-distraction and self-blame as dependent variables confirmed the significant interactions, see Figure 2 (self-distraction: $F_{3, 354} = 4.84, p = 0.003, \eta^2 = 0.02$; self-blame: $F_{3, 354} = 3.10, p = 0.027, \eta^2 = 0.01$). The other subscales were not significant ($p \geq 0.05$).

Association of coping strategies with suicidal ideation

We performed a stepwise linear regression to relate a set of 12 coping subscales, previous suicide attempts, and depression (BDI) with suicidal ideation (BSS) as dependant variable. In the ASSIP group both BDI scores and previous suicide attempts significantly increased BSS scores, see Table 3. The subscales active coping and substance use were significantly associated with a reduction in BSS scores. The overall model was statistically significant ($F_{4, 55} = 26.48, p < 0.0001$) and explained 63% of the variance of the BSS scores (adjusted R^2). In the control group higher BDI scores, behavioural disengagement, previous suicide attempts, and positive reframe, were related to increased BSS scores (see Table 3). The subscale self-distraction was significantly related to a reduction in BSS score. Venting was also part of the final model, but did not reach significance ($p = 0.13$). The overall model was significant, ($F_{6, 53} = 15.37, p < 0.0001$) and explained 59% of the variance in the BSS scores (adjusted R^2).

Discussion

The results of this study on patients with a history of attempted suicide indicate that the brief therapy ASSIP influences coping strategies, which are important in preventing repeated suicide attempts. The hypothesis that coping strategies of patients undergoing ASSIP therapy differs from that of a control group was confirmed, in the 24-month period. The ASSIP group

showed 11% less dysfunctional coping compared to the control group, and 6% more problem-focussed coping after a 24-month follow-up. In contrast, emotion-focussed coping did not differ between the groups. Arguably, ASSIP may reduce dysfunctional coping, potentially enhances problem-focussed coping, and does not seem to have an influence on the emotion-focussed strategies.

Regarding the analysis of dysfunctional and problem-focussed coping over time, only two subscales of dysfunctional coping showed differences between the ASSIP and the control group over time. Upon closer examination, these differences between groups were found for the subscales self-distraction, after 12-months and self-blame after 24-months. Whereas, the subscales of problem-focussed coping did not differ between the groups over time. Showing that, even though there seems to be a small improvement in overall problem-focussed coping, we could not confirm the effect on the subscale level.

Self-distraction, basically defined as dysfunctional (Cooper et al., 2008) in coping with stressful situations, might enable suicidal patients to distract themselves or to take their mind off things, which may allow the suicidal mode to be interrupted. This assumption is nurtured by the findings that ASSIP is effective in preventing suicide attempts (Gysin-Maillart et al., 2016), and that the ASSIP group has statistically significant higher scores on self-distraction after 12-months in this study. The effect loses its relevance in the second year, therefore to self-distraction may be effective in order to cope with situations with high mental pain, but not in times of lower mental pain. Self-blame, in contrast, although initially higher in the ASSIP group, decreased constantly until, after 24-months its' scores fell below the scores of the control group. Therefore, ASSIP has shown to be effective in reducing self-blame in this study. These results are consistent with previous findings, showing that reduced self-blame is an important protective factor for future suicidal behaviour (De Leo & Heller, 2004; Horwitz et al., 2018).

In the present study, no influence on the development of emotion-focussed coping could be found. Previous studies concerning emotion-focussed strategies are contrasting. Seeking emotional support has been associated with less anxiety and depression, on the other hand it has been found to predict suicidal behaviour (Guerreiro et al., 2013; Horwitz et al., 2018; Ryan et al., 2012). Therefore, future research should more precisely assess the kind of emotional support that is being asked for. Possibly seeking one kind of emotional support can be an adaptive coping strategy, whereas another kind may be dysfunctional. Moreover, the Brief COPE Inventory (Carver, 1997, Coolidge et al., 2000) used in this study includes items concerning emotion-focussed strategies, which are not addressed by ASSIP (e.g. humour or religion) and therefore may explain, why no effects were found. In future studies the role of emotion-focussed coping strategies in preventing suicide, and how they can be addressed, should be further investigated.

Further, in this study the relationship between coping strategies and suicidal ideation was examined after 24-months. Firstly, in the ASSIP group, higher rates in active coping (e.g. efforts on doing something about the situation or taking action to make it better), which is a subscale of problem-focussed coping, were associated with lower rates of suicidal ideation. Horwitz and colleagues (2018) reported similar results by finding a protective effect for suicidal behaviour, although only for males, when using active coping strategies. Secondly, higher rates in substance use were also negatively associated with lower scores of suicidal ideation in the ASSIP group. This result stands in contrast with the work of King and colleagues (2001), who found that substance use as a coping strategy implicates an increased risk for future suicidal ideation and attempts. The use of alcohol or drugs has been described as a way of disengaging (Carver et al., 1989), which can be understood as a dysfunctional coping strategy of disengaging from one's goals (McCrae & Costa, 1986). In this context, substance use ("using alcohol or other drugs to make myself feel better/to help me get through it") could be

understood as a strategy for moving away from threatened life goals and thereby reducing suicidality. Further research is needed to review this effect, especially with regard to the fact that slight group differences in substance use were found at the beginning of the study.

In the results of the control group it was shown that behavioural disengagement was positively and self-distraction was negatively, associated with suicidal ideation. A finding also reported by others, who found that the use of behavioural disengagement was predictive of future suicidal ideation (Horwitz et al., 2018; Votta & Manion, 2004) In addition, positive reframing was found to be positively associated with suicidal ideation; this effect was small but in line with Horwitz et al. (2018). Cooper et al. (2008) argued that emotion-focussed coping, such as positive reframing, might depend on other extraneous factors (e.g. quality of close relationships, therapeutic input, etc.).

This study has several strengths, such as a longitudinal design, randomized groups, and utilization of a high-risk clinical sample, which together allow conclusions with high external validity. A limitation of the ASSIP evaluation study relevant for this report was increasing rates of missing data and dropouts during the 24-month follow-up, which were addressed by ITT analysis and the use of multiple imputations (Gysin-Maillart et al., 2016). Furthermore, repeated suicidal behaviour was measured by means of self-assessment and could therefore be over- or underestimated. We tried to reduce this effect for both groups by making final contact with relevant health care professionals and going over emergency reports. Moreover, the receipt of a clinical interview and suicide risk assessment in the control group could have potentially had an effect on participants' coping mechanisms. This procedure could not be avoided for ethical reasons. Since clinical interviews and risk assessment belong to the standard treatment of patients after a suicide attempt, a rather nonspecific effect (e.g. time spent together) can be assumed in this case. In hindsight, the difficulty was not to have any additional contact with the control group. Some participants contacted the research team when they were

in suicidal crisis, so there was repeated contact, partly for ethical reasons, which may have reduced the group differences of the outcome variables.

In summary, our findings suggest that a suicide-specific brief therapy such as ASSIP may have a positive influence on the development of personal coping strategies for patients after a suicide attempt. These results have clinical implications and therefore this focus on interventions should be further emphasized. Further research is needed to investigate the role of emotion-focussed strategies in coping and how it can be addressed through interventions.

Conclusion

The brief therapy ASSIP is a clinical approach to elucidate the background of the suicidal crisis, and - most importantly for this study - it clarifies dysfunctional coping patterns and establishes alternative coping strategies, of which patients are reminded by letters over the course of two years. Thus, teaching problem-focussed coping strategies is important, although it may not be sufficient in reducing suicidal ideation or suicidal behaviour. Instead, the reduction of dysfunctional coping (e.g. self-blame) strategies may be an important supplement to learn new adaptive behaviour. Knowing that functional coping response are available for future suicidal crises may lead the patient to a reappraisal of the triggering situation. Suicide-specific interventions should therefore pay special attention to the development of personal problem-focussed coping strategies as well as the reduction of dysfunctional coping strategies.

Data Availability Statement

Data and analyses that support the findings of this study have been deposited on OSF (<https://osf.io/b8wvp>).

References

- Beck, A. T. (1996). Beyond belief: A theory of modes, personality, and psychopathology. In P. M. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 1-25). New York, NY: Guilford Press.
- Beck, A. T., & Steer, R. A. (1987). *Manual for the revised Beck depression inventory*. San Antonio, TX: Psychological Corporation.
- Beck, A. T., & Steer, R. A. (1991). *Manual for the Beck scale for suicide ideation*. San Antonio, TX: Psychological Corporation.
- Cairns, K. E., Yap, M. B. H., Pilkington, P. D., & Jorm, A. F. (2014). Risk and protective factors for depression that adolescents can modify: A systematic review and meta-analysis of longitudinal studies. *Journal of Affective Disorders, 169*, 61-75. doi:10.1016/j.jad.2014.08.006
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International Journal of Behavioral Medicine, 4*(1), 92-100. doi:10.1207/s15327558ijbm0401_6
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267. doi:10.1037/0022-3514.56.2.267
- Choo, C. C., Harris, K. M., Chew, P. K., & Ho, R. C. (2017). What predicts medical lethality of suicide attempts in Asian youths? *Asian journal of psychiatry, 29*, 136-141. doi.org/10.1016/j.ajp.2017.05.008
- Coolidge, F. L., Segal, D. L., Hook, J. N., & Stewart, S. (2000). Personality disorders and coping among anxious older adults. *Journal of Anxiety Disorders, 14*(2), 157-172. doi:10.1016/S0887-6185(99)00046-8

- Cooper, C., Katona, C., & Livingston, G. (2008). Validity and reliability of the brief COPE in careers of people with dementia: the LASER-AD Study. *The Journal of Nervous and Mental Disease*, 196(11), 838-843. doi: 10.1097/NMD.0b013e31818b504c
- De Leo, D., & Heller, T. S. (2004). Who are the kids who self-harm? An Australian self report school survey. *Medical Journal of Australia*, 181(3), 140-144. doi: del10634_fm [pii] ET - 2004/08/04
- Field, A., Miles, J., & Field, Z. (2012). *Discovering Statistics Using R*. London: SAGE.
- Fidy, R. (2008). *Psychologische Suizidalitäts-Diagnostik im Internet*. Zürich: Universität Zürich.
- Gysin-Maillart, A., Schwab, S., Soravia, L., Megert, M., & Michel, K. (2016). A novel brief therapy for patients who attempt suicide: A 24-months follow-up randomized controlled study of the attempted suicide short intervention program (ASSIP). *PLOS Medicine*, 13(3). doi:10.1371/journal.pmed.1001968
- Guerreiro, D. F., Cruz, D., Frاسquilho, D., Santos, J. C., Figueira, M. L., & Sampaio, D. (2013). Association between deliberate self-harm and coping in adolescents: A critical review of the last 10 years' literature. *Archives of Suicide Research*, 17(2), 91-105. doi:10.1080/13811118.2013.776439
- Hautzinger, M., Bailer, M., Worall, H., & Keller, F. (1994). *Beck-depressions-inventar (BDI). Bearbeitung der deutschen Ausgabe. Testhandbuch*. Bern: Huber.
- Horwitz, A. G., Czyz, E. K., Berona, J., & King, C. A. (2018). Prospective association of coping styles with depression and suicide risk among psychiatric emergency patients. *Behavior Therapy*, 49, 225-236. doi10.1016/j.beht.2017.07.010
- Horwitz, A. G., Hill, R. M., & King, C. A. (2011). Specific coping behaviors in relation to adolescent depression and suicidal ideation. *Journal of Adolescence*, 34(5), 1077-1085. doi:10.2016/j.adolescence.2010.10.004

- King, R. A., Schwab-Stone, M., Flasher, A. J., Greenwald, S., Kramer, R. A., Goodman, S. H., . . . Gould, M. S. (2001). Psychosocial and risk behavior correlates of youth suicide attempts and suicidal ideation. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(7), 837-846. doi:10.1097/00004583-200107000-00019
- Lazarus, R. S. (1993). Coping Theory and Research: Past, Present, and Future. *Psychosomatic Medicine*, 55, 234-47.
- Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. In W. D. Gentry (Ed.), *The handbook of behavioral medicine* (pp. 282-325). New York, NY: Guilford Press.
- Linehan, M. M. (1993). Skills training manual for treating borderline personality disorder. New York: Guilford Press.
- Marshall, A., Altman, D. G., Holder, R. L., & Royston, P. (2009). Combining estimates of interest in prognostic modelling studies after multiple imputation: current practice and guidelines. *BMC Medical Research Methodology*, 9, 57. doi:10.1186/1471-2288-9-57
- Marusic, A., & Goodwin, R. D. (2011). Suicidal and Deliberate Self-Harm Ideation Among Patients with Physical Illness: The Role of Coping Styles. *Suicide and Life-Threatening Behavior*, 36(3), 323-328. doi:10.1521/suli.2006.36.3.323
- McCrae, R. R., & Costa, P. T. (1986). Personality, coping, and coping effectiveness in an adult sample. *Journal of personality*, 54(2), 385-404. doi:10.1111/j.1467-6494.1986.tb00401.x
- Michel, K., & Gysin-Maillart, A. (2015). *ASSIP–Attempted Suicide Short Intervention Program: A Manual for Clinicians*, Hogrefe Publishing: Berne.
- Michel, K., & Valach, L. (1997). Suicide as goal-directed action. *Archives of Suicide Research*, 3(3), 213-221. doi:10.1080/13811119708258258273

- Michel, K., & Valach, L. (2011). The narrative interview with the suicidal patient. In K. Michel & D. A. Jobes (Eds.), *Building a therapeutic alliance with the suicidal patient* (pp. 63-80). Washington, DC: American Psychological Association.
- O'Connor, R. C., Smyth, R., & Williams, J. M. G. (2015). Intrapersonal positive future thinking predicts repeat suicide attempts in hospital-treated suicide attempters. *Journal of Consulting and Clinical Psychology*, 83(1), 169-176. doi:10.1037/a0037846
- Rickham, P. P. (1964). Human Experimentation. Code of Ethics of the World Medical Association. Declaration of Helsinki. *British Medical Journal*, 2(177). doi:10.1136/bmj.2.5402.177
- Riley, T. J., Kirsch, A. C., Shapiro, J. B., & Conley, C. S. (2016). Examining stress and coping as a mediator for internalizing symptomatology: A comparison between sexual minority and majority first-year college students. *Journal of Adolescence*, 49, 124-133. doi:10.1016/j.adolescence.2016.03.005
- Rudd, M. D. (2000). The Suicidal Mode: A Cognitive-Behavioral Model of Suicidality. *Suicide and Life-Threatening Behavior*, 30(1), 18-33. [doi:10.1111/j.1943-278X.2000.tb01062.x](https://doi.org/10.1111/j.1943-278X.2000.tb01062.x)
- Rudd, M. D., Joiner, T. E., & Rajab, M. H. (2004). *Treating suicidal behavior: An effective, time-limited approach*. New York, NY: Guilford Press.
- Ryan, L., Cooper, C., Austin, A., & Livingston G. (2013). Do changes in coping style explain the effectiveness of interventions for psychological morbidity in family carers of people with dementia? A systematic review and meta-analysis. *International Psychogeriatrics*, 25(2), 204–214. doi:10.1017/S1041610212001755
- Schaffer, J., & Pritchard, M. E. (2003). Impact of stress on health and coping tactics in relation to sex. *The Psi Chi Journal of Undergraduate Research*, 8, 12-20. doi:10.24839/1089-4136.JN8.1.12

- Shneidman, E. S. (1993). Suicide as psychache. *The Journal of Nervous and Mental Disease*, 181(3), 145-147.
- Spirito, A., Overholser, J., & Stark, L. J. (1989). Common problems and coping strategies II: Findings with adolescent suicide attempters. *Journal of Abnormal Child Psychology*, 17(2), 213-221. doi:10.1007/BF00913795
- Stanley, B., & Brown, G. K. (2012). Safety Planning Intervention: A brief intervention to mitigate suicide risk. *Cognitive and Behavioral Practice*, 19(2), 256-264. doi:10.1016/j.cbpra.2011.01.001
- Votta, E., & Manion, I. (2004). Suicide, high-risk behaviors, and coping style in homeless adolescent males' adjustment. *Journal of Adolescent Health*, 34(3), 237-243. doi:10.1016/S1054-139X(03)00271-4
- van Buuren, S., & Groothuis-Oudshoorn, K. (2010). mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, 1-68. doi:10.18637/jss.v045.i03
- Wadsworth, M. E., & Compas, B. E. (2002). Coping with family conflict and economic strain: The adolescent perspective. *Journal of Research on Adolescence*, 12(2), 243-274. doi:10.1111/1532-7795.00033
- Williams, F., & Hasking, P. (2010). Emotion regulation, coping and alcohol use as moderators in the relationship between non-suicidal self-injury and psychological distress. *Prevention Science*, 11(1), 33-41. doi:10.1007/s11121-009-0147-8
- Yeo, S. N., Zainal, H., Tang, C. S., Tong, E. M., Ho, C. S., & Ho, R. C. (2017). Success/failure condition influences attribution of control, negative affect, and shame among patients with depression in Singapore. *BMC psychiatry*, 17(1), 285. Doi: 10.1186/s12888-017-1451-7

Table 1

Baseline characteristics of study participants

	ASSIP	Control	Total	test statistic	<i>p</i> -value
	<i>N</i> = 60	<i>N</i> = 60	<i>N</i> = 120		
Female/Male	36/24	30/30	66/54	$\chi^2 = 1.21$.27 ¹
Age, years (SD)	36.5 (14.3)	39.1 (14.6)	37.8 (14.4)	W = 1616	.33 ²
Diagnosis (ICD-10) - <i>n</i> (%)					
F1	10 (17)	20 (33)	30 (25)	$\chi^2 = 4.44$.035 ¹
F3	40 (67)	36 (60)	76 (63)	$\chi^2 = 0.57$.45 ¹
F4	25 (42)	28 (47)	53 (44)	$\chi^2 = 0.30$.58 ¹
F6	8 (13)	12 (20)	20 (17)	$\chi^2 = 0.96$.33 ¹
Other	6 (10)	1 (2)	7 (6)	$\chi^2 = 3.79$.051 ¹
Married - <i>n</i> (%)	19 (32)	15 (25)	34 (28)	$\chi^2 = 0.66$.42 ¹
Children - <i>n</i> (%)	25 (42)	19 (32)	44 (37)	$\chi^2 = 1.29$.26 ¹
Employed - <i>n</i> (%)	34 (57)	36 (60)	70 (58)	$\chi^2 = 0.14$.71 ¹
BDI, mean (SD)	18.1 (11.4)	18.3 (12.2)	18.2 (11.8)	W = 1788	0.95 ²
BSS, mean (SD)	7.4 (8.4)	9.1 (9.1)	8.2 (8.8)	W = 1614	0.32 ²
COPE, mean (SD)	2.13 (0.32)	2.18 (0.32)	2.15 (0.32)	W = 1676	0.51 ²
Dysfunctional coping	2.15 (0.35)	2.23 (0.43)	2.19 (0.39)	W=1602	0.30
Problem-focused cop.	2.45 (0.66)	2.47 (0.58)	2.46 (0.62)	W=1728	0.70
Emotion-focused cop.	1.92 (0.45)	1.94 (0.41)	1.93 (0.43)	W=1806	0.97

Note. F1: substance abuse disorder; F3: Neurotic and acute stress reaction; F4: affective disorder; F6: Personality disorder; BDI: Beck Depression Inventory; BSS: Beck Scale for Suicide Ideation; COPE: Brief COPE Inventory; ¹Chi-square test; ²Mann-Whitney *U* test.

Table 2

The three subscales dysfunctional, problem-focussed, and emotion-focussed coping

Dysfunctional coping strategies ($\alpha = .75$)	Problem-focussed coping strategies ($\alpha = .84$)	Emotion-focussed coping strategies ($\alpha = .72$)
Self-distraction ($\alpha = .71$), items 1&19 (<i>turning to work or other activities to take my mind off things/doing something to think about it less</i>)	Active coping ($\alpha = .68$), items 2&7 (<i>concentrating my efforts on doing something about the situation I'm in /taking action to try to make it better</i>)	Use of emotional support ($\alpha = .71$), items 5&15 (<i>getting emotional support/comfort and understanding</i>)
Denial ($\alpha = .54$), items 3&8 (<i>saying to myself "this isn't real" /refusing to believe that it has happened</i>)	Use of instrumental support ($\alpha = .64$), items 10&23 (<i>getting help and advice from other people/trying to get advice or help from others about what to do</i>)	Positive reframing ($\alpha = .64$), items 12&17 (<i>trying to see it in a different light, make it seem more positive/look for something good in it</i>)
Substance use ($\alpha = .90$), items 4&11 (<i>using alcohol or other drugs to make myself feel better/to help me get through it</i>)	Planning ($\alpha = .73$), items 14&25 (<i>trying to come up with a strategy about what to do/thinking hard about what steps to take</i>)	Humour ($\alpha = .73$), items 18&28 (<i>making jokes about it/making fun of the situation</i>)
Behavioural disengagement ($\alpha = .65$), items 6&16 (<i>giving up trying to deal with it/the attempt to cope</i>)		Acceptance ($\alpha = .57$), items 20&24 (<i>accepting the reality that it has happened/learning to live with it</i>)
Venting ($\alpha = .50$), items 9&21 (<i>saying things to let unpleasant feelings / escape expressing negative feelings</i>)		Religion ($\alpha = .82$), items 22&27 (<i>finding comfort in religious or spiritual beliefs/praying or mediating</i>)
Self-blame ($\alpha = .69$), items 13&26 (<i>criticizing myself/blaming myself for things that happened</i>)		

Note. Carver (1997) reported on internal consistencies of all 14 scales of the Brief COPE Inventory . Cooper

and colleagues (2008) reported for the three subscales dysfunctional, problem-focussed, and emotion-focussed coping .

Table 3

Association of coping behaviour with suicidal ideation

	estimate	95%-CI	t-value	p-value
ASSIP				
BDI sum	0.39	from 0.25 to 0.54	5.61	<0.0001
Active coping	-2.91	from -4.65 to -1.18	-3.36	0.001
Previous suicide attempts	0.85	from 0.17 to 1.52	2.52	0.015
Substance use	-2.14	from -4.15 to -0.14	-2.14	0.036
CG				
BDI sum	0.46	from 0.34 to 0.59	7.52	<0.0001
Behav. disengagement	2.74	from 0.68 to 4.80	2.67	0.01
Previous suicide attempts	0.50	from 0.09 to 0.92	2.42	0.019
Self-distraction	-1.60	from -3.02 to -0.19	-2.27	0.027
Positive reframe	1.74	from 0.07 to 3.42	2.09	0.042
Venting	-1.62	from -3.71 to 0.47	-1.56	0.13

Note. CI = confidence interval; BDI sum = Beck Depression Inventory sum score, at 24-months; ASSIP =

Attempted Suicide Short Intervention Program; CG = Control Group: Behav. Disengagement = Behavioural disengagement.

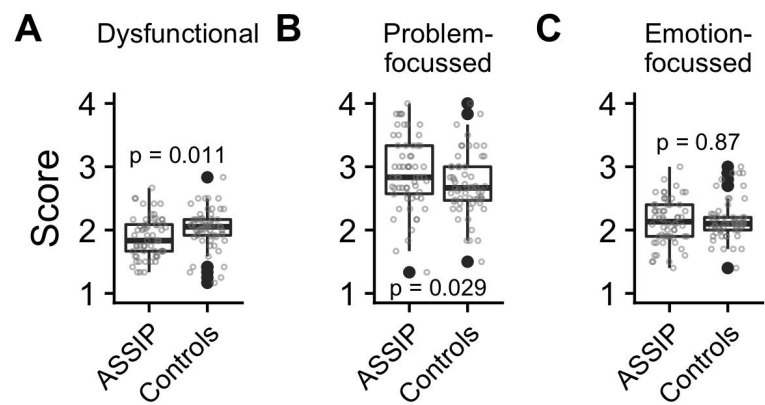


Figure 1. Scores for problem-focussed, emotion-focussed, and dysfunctional coping after 24-months follow-up, for both groups (ASSIP and CG).

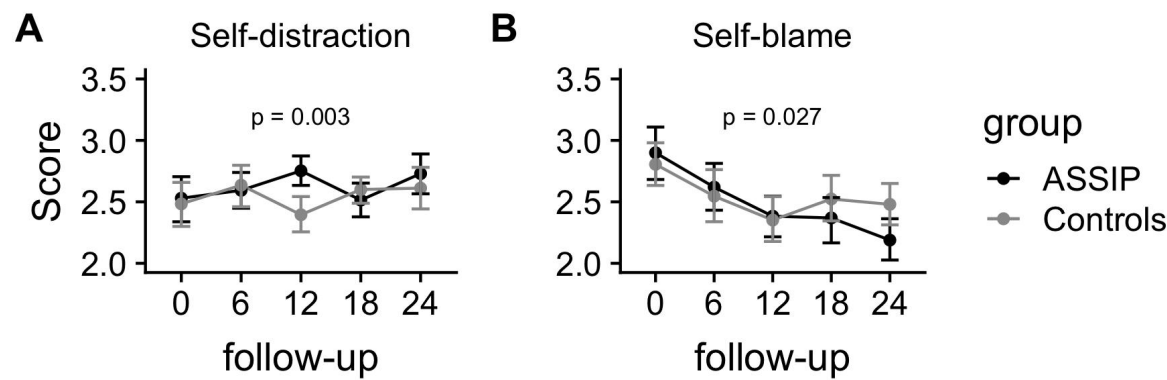


Figure 2. Scores for self-distraction and self-blame for ASSIP and CG group from baseline to 24-months at six months intervals. Error bars are the 95% confidence intervals.